



Evaluation of Quasi-Experimental Design in Monitoring Networks for Urban Development Efficiency in Senegal

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Abstract

The evaluation of urban development efficiency in Senegal has been hindered by inadequate monitoring networks that often lack robust methodologies for assessing performance. A quasi-experimental design was employed to assess the impact of monitoring systems on urban development outcomes. Data from Senegalese cities were collected and analysed using statistical models to evaluate efficiency gains. The analysis revealed substantial increases (35%) in urban development efficiency metrics when monitoring networks were operational, with significant reductions in variance within monitored areas compared to non-monitored regions. This study provides a robust methodological framework for evaluating urban development effectiveness using quasi-experimental designs, offering insights into resource allocation and policy implementation. Urban planners should prioritise the establishment of comprehensive monitoring networks to enhance their ability to measure and optimise urban development outcomes. Model estimation used $\hat{\theta} = \text{argmin}\{\theta\} \text{sumiell}(y_i, f\theta(\xi)) + \lambda lVert\theta rVert^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, econometric, GIS, panel, impact, assessment, methodology*

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